1)

$372 = m_1 \cdot 5! + m_2 \cdot 4! + m_3 \cdot 3! + m_4 \cdot 2! + m_5 \cdot 1! + 1$

$372 = 120m_1 + 24m_2 + 6m_3 + 2m_4 + m_5 + 1$

$371 = 120m_1 + 24m_2 + 6m_3 + 2m_4 + m_5$

$371 : 120 = 3 = m_1$
360

$11 : 24 = 0 = m_2$
0

$11 : 6 = 1 = m_3$
6

$5 : 2 = 2 = m_4$
4

$1 : 1 = 1 = m_5$
1
0

1^0	2^1	3^2	4^3	5^4	6^5	m
4	1	2	3	5	6	$m_1 = 3$
4	1	2	3	5	6	$m_2 = 0$
4	1	3	2	5	6	$m_3 = 1$
4	1	3	6	2	5	$m_4 = 2$
4	1	3	6	5	2	$m_5 = 1$

↓ 1

4 1 3 6 5 2

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2) $4638 = m_1 \cdot 6! + m_2 \cdot 5! + m_3 \cdot 4! + m_4 \cdot 3! + m_5 2! + m_6 + 1$

$4637 = 720m_1 + 120m_2 + 24m_3 + 6m_4 + 2m_5 + m_6$

$4637 : 720 = 6 = m_1$
4320

$317 : 120 = 2 = m_2$
240

$77 : 24 = 3 = m_3$
72

$5 : 6 = 0 = m_4$
0

$5 : 2 = 2 = m_5$
4

$1 : 1 = 1 = m_6$
1
0

1^0	2^1	3^2	4^3	5^4	6^5	7^6	m
7	1	2	3	4	5	6	$m_1 = 6$
7	3	1	2	4	5	6	$m_2 = 2$
7	3	5	1	2	4	6	$m_3 = 3$
7	3	5	1	2	4	6	$m_4 = 0$
7	3	5	1	6	2	4	$m_5 = 2$
7	3	5	1	6	4	2	$m_6 = 1$

7 3 5 1 6 4 2

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3/4) 465123

1 2 3 4 5 6

1	2	3	4	5	6	m
4	1	2	3	5	6	$m_1 = 3$
4	6	1	2	3	5	$m_2 = 4$
4	6	5	1	2	3	$m_3 = 3$
4	6	5	1	2	3	$m_4 = 0$
4	6	5	1	3	2	$m_5 = 1$

$r = 3 \cdot 5! + 4 \cdot 4! + 3 \cdot 3! + 0 \cdot 2! + 1 \cdot 1! + 1$

$r = 3 \cdot 120 + 4 \cdot 24 + 3 \cdot 6 + 1 + 1$

$r = 360 + 96 + 18 + 2$

$r = 476$

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5) 68341275

1 2 3 4 5 6 7 8

1	2	3	4	5	6	7	8	m
6	1	2	3	4	5	7	8	$m_1 = 5$
6	8	1	2	3	4	5	7	$m_2 = 6$
6	8	3	1	2	4	5	7	$m_3 = 2$
6	8	3	4	1	2	5	7	$m_4 = 2$
6	8	3	4	1	2	5	7	$m_5 = 0$
6	8	3	4	1	2	5	7	$m_6 = 0$
6	8	3	4	1	2	7	5	$m_7 = 1$

~~$r = 5 \cdot 7! + 6 \cdot 6! + 5 \cdot 2! +$~~

$r = 5 \cdot 7! + 6 \cdot 6! + 2 \cdot 5! + 2 \cdot 4! +$

$+ 0 \cdot 3! + 0 \cdot 2! + 1 \cdot 1! + 1$

$r = 5040 \cdot 5 + 720 \cdot 6 + 120 \cdot 2 + 24 \cdot 2$

$+ 2$

$r = 25200 + 4320 + 240 + 48 + 2$

$r = 29810$

8)

6 3 4 1 2 5 3 4 3 5

1 2 3 3 3 4 4 5 5 6

1	2	3	3	3	4	4	5	5	6	m
6	1	2	3	3	3	4	4	5	5	$m_1 = 9$
6	3	1	2	3	3	4	4	5	5	$m_2 = 2$
6	3	4	1	2	3	3	4	5	5	$m_3 = 4$
6	3	4	1	2	3	3	4	5	5	$m_{4} = 0$
6	3	4	1	2	3	3	4	5	5	$m_5 = 0$
6	3	4	1	2	5	3	3	4	5	$m_6 = 3$
6	3	4	1	2	5	3	3	4	5	$m_7 = 0$
6	3	4	1	2	5	3	4	3	5	$m_8 = 1$
6	3	4	1	2	5	3	4	3	5	$m_9 = 0$
6	3	4	1	2	5	3	4	3	5	

$$\pi = 9 \cdot P_{3,2,1,2}(9) + 2 \cdot P_{3,2,1,2}(8) + 4 \cdot P_{2,1,2,1,2}(7) + 0 \cdot P_{2,1,2}(6) + 0 \cdot P_{2,1,2}(5) + 3 \cdot P_{2,1,2}(4) + 0 \cdot P_{2}(3) + 1 \cdot P(2) + 0 \cdot P(1) + 1$$

$$\pi = 9 \cdot \frac{9!}{3! \cdot 2! \cdot 2!} + 2 \cdot \frac{8!}{3! \cdot 2! \cdot 2!} + 4 \cdot \frac{7!}{2! \cdot 2! \cdot 2!} + 3 \cdot \frac{4!}{2! \cdot 2!} + 1 \cdot \frac{2!}{2!} + 1$$

$$\pi = 9 \cdot \frac{9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3!}{3! \cdot 2 \cdot 2} + 2 \cdot \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3!}{3! \cdot 2 \cdot 2} + 4 \cdot \frac{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2!}{2! \cdot 2 \cdot 2} + 3 \cdot \frac{4 \cdot 3 \cdot 2!}{2 \cdot 2!}$$

$$\pi = 9 \cdot 9 \cdot 8 \cdot 7 \cdot 3 \cdot 5 \cdot 2 + 2 \cdot 8 \cdot 7 \cdot 3 \cdot 5 \cdot 2 + 4 \cdot 7 \cdot 3 \cdot 5 \cdot 2 \cdot 3 + 3 \cdot 2 \cdot 3 + 2 + 1$$

$$\pi = 136080 + 3360 + 2520 + 18 + 3$$

$$\pi = 141981$$

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9)

7352215361 12

1112223355 67

1	1	1	2	2	2	3	3	5	5	6	7	m
7	1	1	1	2	2	2	3	3	5	5	6	$m_1 = 11$
7	3	1	1	1	2	2	2	3	5	5	6	$m_2 = 6$
7	3	5	1	1	1	2	2	2	3	5	6	$m_3 = 7$
7	3	5	2	1	1	1	2	2	3	5	6	$m_4 = 3$
7	3	5	2	2	1	1	1	2	3	5	6	$m_5 = 3$
7	3	5	2	2	1	1	1	2	3	5	6	$m_6 = 0$
7	3	5	2	2	1	5	1	1	2	3	6	$m_7 = 4$
7	3	5	2	2	1	5	3	1	1	2	6	$m_8 = 3$
7	3	5	2	2	1	5	3	6	1	1	2	$m_9 = 3$
7	3	5	2	2	1	5	3	6	1	1	2	$m_{10} = 0$
7	3	5	2	2	1	5	3	6	1	1	2	$m_{11} = 0$
7	3	5	2	2	1	5	3	6	1	1	2	

$$\pi = 11 \cdot P_{3,3,2,2}(11) + 6 \cdot P_{3,3,2,2}(10) + 7 \cdot P_{3,3,2}(9) + 3 \cdot P_{3,3}(8) + 3 \cdot P_{3,2}(7) + 0 \cdot P_3(6)$$
$$+ 4 \cdot P_2(5) + 3 \cdot P_2(4) + 3 \cdot P_2(3) + 0 \cdot P_2(2) + 0 \cdot P(1) + 1$$

$$\pi = 11 \cdot \frac{11!}{3! \cdot 3! \cdot 2! \cdot 2!} + 6 \cdot \frac{10!}{3! \cdot 3! \cdot 2! \cdot 2!} + 7 \cdot \frac{9!}{3! \cdot 3! \cdot 2!} + 3 \cdot \frac{8!}{3! \cdot 3!} + 3 \cdot \frac{7!}{3! \cdot 2!}$$
$$+ 4 \cdot \frac{5!}{2!} + 3 \cdot \frac{4!}{2!} + 3 \cdot \frac{3!}{2!} + 1$$

$$\pi = 11 \cdot \frac{39916800}{144} + 6 \cdot \frac{3628800}{144} + 7 \cdot \frac{362880}{72} + 3 \cdot \frac{40320}{36} + 3 \cdot \frac{5040}{18}$$
$$+ 4 \cdot \frac{120}{2} + 3 \cdot \frac{24}{2} + 3 \cdot \frac{6}{2} + 1$$

$$\pi = 11 \cdot 277200 + 6 \cdot 25200 + 7 \cdot 5040 + 3 \cdot 1120 + 3 \cdot 280 + 4 \cdot 60 + 3 \cdot 12$$
$$+ 3 \cdot 3 + 1$$

$$\pi = 3049200 + 151200 + 35280 + 3360 + 840 + 240 + 36 + 9 + 1 = 3240166$$

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11) $P(4) = 4! = 24$ - mënyra

12) $n = 6$

$6 - 2 = 4$

$P(4) = 4! = 24$ - mënyra

13) a) $n = 30 \quad k = 3$

$$C_n^k = \frac{n!}{k! \cdot (n-k)!} = \frac{30!}{3! \cdot 27!} = \frac{\overset{5}{30} \cdot 29 \cdot 28 \cdot \cancel{27!}}{\cancel{6} \cdot \cancel{27!}} = 5 \cdot 29 \cdot 28 = 4060 \text{ - mënyra}$$

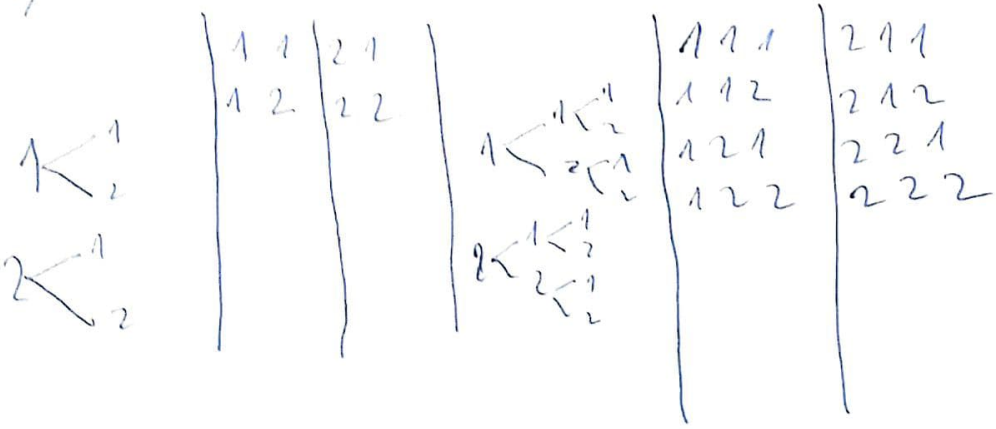
b) $n = 30 \quad k = 30$

$$C_n^k = \frac{30!}{30! \cdot 0!} = \frac{\cancel{30!}}{\cancel{30!} \cdot 1} = 1 \text{ - mënyrë}$$

14) $n = 42 \quad k = 3$

$$C_n^k = \frac{42!}{3! \cdot 39!} = \frac{\overset{7}{42} \cdot 41 \cdot 40 \cdot \cancel{39!}}{\cancel{6} \cdot \cancel{39!}} = 7 \cdot 41 \cdot 40 = 11480 \text{ - mënyra}$$

17)



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18) $n=12 \quad k=3$

$$V_n^k = \frac{12!}{9!} = \frac{12 \cdot 11 \cdot 10 \cdot 9!}{9!} = 1320$$

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20) $n=5 \quad k=3$

$$C_n^k = \frac{5!}{3! \cdot 2!} = \frac{120}{12} = 10 \text{ - mënyra}$$

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21) 20 D $k=3$ 16 V $k=1$

$$C_k^n \cdot C_k^n = \frac{20!}{3! \cdot 17!} \cdot \frac{16!}{15!} = \frac{20 \cdot 19 \cdot \cancel{18}^{3} \cdot 17!}{\cancel{6} \cdot 17!} \cdot \frac{16 \cdot \cancel{15!}}{\cancel{15!}}$$

$$= 20 \cdot 19 \cdot 3 \cdot 16 = 18240 \text{ - mënyra.}$$